Personal information

Full name:	Botma Visser
Date of birth:	19 July 1965
Place of birth:	Middelburg, Mpumalanga, South Africa
Identity number:	6507195001084
Nationality:	South African
Rank:	Associate Professor
Physical address:	Department of Plant Sciences Room 134 Biology Building University of the Free State Nelson Mandela Drive PO Box 339 Bloemfontein, 9300 South Africa
Postal address:	Department of Plant Sciences University of the Free State PO Box 339 Bloemfontein, 9300
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E-mail address:	visserb@ufs.ac.za

Education and employment

School education

1983

Sand du Plessis High School, Bloemfontein

Military service

1984-1985

School of Engineers, Kroonstad

Tertiary education

2004

PhD (Plant Molecular Genetics), University of the Free State. Analysis of *At-RLK3*, a putative receptor like kinase from *Arabidopsis thaliana*

1993

MSc (Plant Molecular Genetics), University of the Orange Free State. Cloning and preliminary characterization of the beta-subunit of the pyrophosphate dependent phosphofructokinase

1989

BSc Honors (Microbiology), Cum Laude. University of the Orange Free State

1988

BSc (Botany and Microbiology), University of the Orange Free State

Employment

2018-current

Associate Professor, Department of Plant Sciences, University of the Free State

2010-2023

Program Director, Department of Plant Sciences, University of the Free State

2009-2017

Senior lecturer, Department of Plant Sciences, University of the Free State

1994-2008

Lecturer, Department of Plant Sciences, University of the Free State

1990-1993

Junior Lecturer, Department of Botany and Genetics, University of the Orange Free State

1988-1989

Temporary Laboratory Assistant, Department of Microbiology and Biochemistry, University of the Orange Free State

Awards

2014

Excellence in Teaching and Learning Innovation Reward: Assessment Practices. Faculty of Natural and Agricultural Sciences, University of the Free State

2005

HM van Zinderenbakker award for an outstanding PhD dissertation in Botany

Professional qualification

Natural Scientist

Research

ORCID number

0000-0001-9002-3086

NRF rating

2023-2028

I submitted my rating application at the end of 2022 and expect the outcome at the end of 2023.

2017-2022

I obtained a C2 rating at the end of the 2016 reviewing cycle.

Funding grants

2023-2024

South African Wheat Cereal Industry Trust (SAWCIT). Screening South African stem and stripe rust race isolates for fungicide insensitivity using MARPLE diagnostics (project SAWCIT 22/23 2(a)). PI - Prof B Visser. R365 000 over 2 years.

2021-2025

NRF SARChI chair. Disease resistance and quality in field crops. PI - Prof M Labuschagne (Plant Breeding). Prof WHP Boshoff and myself are responsible for the Disease resistance in field crops.

2016-2020

NRF SARChI chair. Disease resistance and quality in field crops. PI - Prof M Labuschagne (Plant Breeding). Prof WHP Boshoff and myself are responsible for the Disease resistance in field crops.

Publications

Scientific publications (46 publications)

Mafa MS, Lebusa N, Gumani TF, Kemp G, **Visser B**, Boshoff WHP and Castelyn HD, 2023. Accumulation of complex oligosaccharides and CAZymes activity under acid conditions constitute the Thatcher+*Lr9* defence responses to *Puccinia triticina*. Biologia 78: 1929-1941. **IF** 1.653. doi.org/10.1007/s11756-023-01405-7

Mafa MS, **Visser B**, Boshoff WHP, Kemp G, Alexander O and Castelyn HD, 2023. Flagging defensive roles of carbohydrate-active enzymes (CAZymes) and carbohydrates during *Puccinia triticina*-wheat interactions. Physiological and Molecular Plant Pathology 124: 101947. **IF** 2.741. doi.org/10.1016/j.pmpp.2023.101947

Terefe TG, **Visser B**, Pretorius ZA and Boshoff WHP, 2023. Physiologic races of *Puccinia triticina* detected on wheat in South Africa from 2017 to 2020. European Journal of Plant Pathology 165: 1-15. **IF** 2.1. doi.org/10.1007/s10658-022-02583-x

Szabo LJ, Olivera PD, Wanyera R, **Visser B** and Yue Jin, 2022. Development of a diagnostic assay for differentiation between genetic groups in clades I, II, III and IV of *Puccinia graminis* f. sp. *tritici*. Plant Disease 106: 2211-2220. **IF** 4.614. doi.org/10.1094/PDIS-10-21-2161-RE

Spelman Z, **Visser B**, Terefe T, Pretorius ZA and Boshoff WHP, 2022. Pathogenicity and microsatellite characterization of *Puccinia hordei* in South Africa. Crop Protection 158: 106014. **IF** 3.036. doi.org/10.1016/j.cropro.2022.106014

Boshoff WHP, **Visser B**, Bender CM, Wood AR, Rothmann L, Wilson K, Hamilton-Attwell VL and Pretorius ZA, 2022. Fig rust caused by *Phakopsora nishidana* in South Africa. Phytopathologia Mediterranea 61: 283-298. **IF** 1.788. doi.org/10.36253/phyto-13034

Boshoff WHP, Wood AR, **Visser B**, Bender CM, Joubert L, Richter J, Aime MC and Pretorius ZA, 2022. The life cycle of *Puccinia digitariae* on *Digitaria eriantha* and *Solanum* species in South Africa. Mycologia 114: 319-336. **IF** 2.696. doi.org/10.1080/00275514.2022.2031493

Combrink HM, Oosthuizen J, **Visser B**, Chabilal N, Buccimazza I, Foulkes WD and van der Merwe NC, 2021. Mutations in BRCA-related breast and ovarian cancer in the South African Indian population: A descriptive study. Cancer Genetics 15: 258-259. **IF** 2.523. doi.org/10.1016/j.cancergen.2021.06.002

Labuschagne R, Venter E, Boshoff WHP, Pretorius ZA, Terefe T and **Visser B**, 2021. Historical development of the *Puccinia triticina* population in South Africa. Plant Disease 105: 2445. **IF** 4.438. doi.org/10.1094/PDIS-10-20-2301-RE.

Terefe TG, **Visser B**, Botha W, Kozana A, Roberts R, Thompson GD, Prinsloo G and Read DA, 2021. Detection and molecular characterization of Wheat stripe mosaic virus on wheat in South Africa. Crop Protection 143: 105464. **IF** 2.49. doi.org/10.1016/j.cropro.2020.105464

Meyer WB, Boshoff WHP, Minnaar-Ontong A, Young A, Kong G, Thompson S, Pretorius ZA and **Visser B**, 2021. Phenotypic and genotypic variation of *Puccinia helianthi* in South Africa. Plant Disease 105: 1482-1489. **IF** 4.438. doi.org/10.1094/PDIS-09-20-1903-RE

Pretorius ZA, Prins R, Wessels W, Bender CM, **Visser B** and Boshoff WHP, 2020. Accomplishments in wheat rust research in South Africa. South African Journal of Science 116: 11-12. **IF** 1.191. doi.org/10.17159/sajs.2020/7688

Mafa MS, Castelyn HD, Kemp G and **Visser B**, 2020. Delineating induced defense responses in wheat seedlings exposed to volatiles emitted by *Puccinia triticina* infected wheat. Physiological and Molecular Plant Pathology 112: 101538. **IF** 1.646. doi.org/10.1016/j.pmpp.2020.101538

Boshoff WHP, Pretorius ZA, Terefe T and **Visser B**, 2020. Occurrence and pathogenicity of *Puccinia coronata* var *avenae* f. sp. *avenae* on oat in South Africa. Crop Protection 133: 105144. **IF** 2.381. doi.org/10.1016/j.cropro.2020.105144

Kolmer JA, Herman A, Ordoñez ME, German S, Morgounov A, Pretorius ZA, **Visser B**, Anikster Y and Acevedo M, 2020. Endemic and panglobal genetic groups, and divergence of host-associated forms in worldwide collections of the wheat leaf rust fungus *Puccinia triticina* as determined by genotyping by sequencing. Heredity 124: 397-409. **IF** 3.179. doi.org/10.1038/s41437-019-0288-x

Boshoff WHP, **Visser B**, Lewis CM, Adams TM, Saunders DGO, Terefe T, Soko T, Chiuraise N and Pretorius ZA, 2020. First report of *Puccinia striiformis* f. sp. *tritici*, causing stripe rust of wheat, in Zimbabwe. Plant Disease 104: 290. **IF** 2.94. doi.org/10.1094/PDIS-07-19-1395-PDN

Li F, Upadhyaya NM, Sperschneider J, Matny O, Nguyen-Phuc H, Mago R, Raley C, Miller ME, Silverstein KAT, Henningsen E, Hirsch CD, **Visser B**, Pretorius ZA, Steffenson BJ, Schwessinger B, Dodds PN and Figueroa M, 2019. Emergence of the Ug99 lineage of the wheat stem rust pathogen through somatic hybridisation. Nature Communications 10: 5068. **IF** 11.88. doi.org/10.1038/s41467-019-12927-7

Boshoff WHP, **Visser B**, Terefe T and Pretorius ZA, 2019. Diversity in *Puccinia graminis* f. sp. *avenae* and its impact on oat cultivar response in South Africa. European Journal of Plant Pathology 155: 1165-1177. **IF** 1.74. doi.org/10.1007/s10658-019-01845-5

Kolmer JA, Ordoñez ME, German S, Morgounov A, Pretorius Z, **Visser B**, Goyeau H, Anikster Y and Acevedo M, 2019. Multilocus genotypes of the wheat leaf rust fungus *Puccinia triticina* in worldwide regions indicate past and current long-distance migration. Phytopathology 109: 1453-1463. **IF** 2.896. doi.org/10.1094/PHYTO-10-18-0411-R

Terefe T, Pretorius ZA, **Visser B** and Boshoff WHP, 2019. First report of *Puccinia graminis* f. sp. *tritici* race PTKSK, a variant of wheat stem rust race Ug99 in South Africa. Plant Disease 103: 1421. **IF** 2.94. doi.org/10.1094/PDIS-11-18-1911-PDN

Visser B, Meyer M, Park RF, Gilligan CA, Burgin LE, Hort MC, Hodson DP and Pretorius ZA, 2019. Microsatellite analysis and urediniospore dispersal simulations support the movement of *Puccinia graminis* f. sp. *tritici* from southern Africa to Australia. Phytopathology 109: 133-144. **IF** 2.896. doi.org/10.1094/PHYTO-04-18-0110-R

Boshoff WHP, Pretorius ZA, Terefe TG, Bender CM, Herselman L, Maree GJ and **Visser B**, 2018. Phenotypic and genotypic description of *Puccinia graminis* f. sp. *tritici* race 2SA55 in South Africa. European Journal of Plant Pathology 152: 783-789. **IF** 1.478. doi.org/10.1007/s10658-018-1527-3

Boshoff WHP, Labuschagne R, Terefe T, Pretorius ZA and **Visser B**, 2018. New *Puccinia triticina* races on wheat in South Africa. Australasian Plant Pathology 47: 325-334. **IF** 1.026. doi.org/10.1007/s13313-018-0560-1

Lewis CM, Persoons A, Bebber DP, Kigathi RN, Maintz J, Findlay K, Bueno-Sancho V, Corredor-Moreno P, Harrington SA, Kangara N, Berlin A, García R, Germán SE, Hanzalová A, Hodson DP, Hovmøller MS, Huerta-Espino J, Imtiaz M, Iqbal Mirza J, Justesen AF, Niks RE, Omrani A, Patpour M, Pretorius ZA, Roohparvar R, Sela H, Singh RP, Steffenson B, **Visser B**, Fenwick PM, Thomas J, Wulff BH and Saunders DGO, 2018. Potential for re-emergence of wheat stem rust in the UK. Communications Biology (online) 1: 13. **IF** 6.548. doi.org/10.1038/s42003-018-0013-y

Terefe TG, **Visser B** and Pretorius ZA, 2016. Variation in *Puccinia graminis* f. sp. *tritici* detected on wheat and triticale in South Africa from 2009 to 2013. Crop Protection 86: 9-16. **IF** 1.493. doi.org/10.1016/j.cropro.2016.04.006

Visser B, Herselman L and Pretorius ZA, 2016. Microsatellite characterisation of South African *Puccinia striiformis* races. South African Journal of Plant and Soil 33: 161-166. **IF** 0.51. doi.org/10.1080/02571862.2015.1125957

Castelyn HD, Appelgryn JJ, Mafa MS, Pretorius ZA and **Visser B**, 2015. Volatiles emitted by leaf rust infected wheat induce a defence response in exposed uninfected wheat seedlings. Australasian Plant Pathology 44: 245-254. **IF** 1.041. doi.org/10.1007/s13313-014-0336-1

Pretorius ZA, **Visser B**, Terefe TG, Herselman L, Prins R, Soko T, Siwale J, Mutari B, Selinga TI and Hodson DP, 2015. Races of *Puccinia triticina* detected on wheat in Zimbabwe, Zambia and Malawi and regional germplasm responses. Australasian Plant Pathology 44: 217-224. **IF** 1.041. doi.org/10.1007/s13313-014-0339-y

Pretorius ZA, Bender CM and **Visser B**, 2015. The rusts of wild rye in South Africa. South African Journal of Botany 96: 94-98. **IF** 1.511. doi.org/10.1016/j.sajb.2014.10.005

Figlan S, le Roux C, Terefe T, Botes W, **Visser B**, Shimelis H and Tsilo TJ, 2014. Wheat stem rust in South Africa: current status and future research directions. African Journal of Biotechnology 13: 4188-4199. **IF** 0.57. doi.org/10.5897/AJB2014.14100

Terefe TG, **Visser B**, Herselman L, Selinga T and Pretorius ZA, 2014. First report of *Puccinia triticina* (leaf rust) race FBPT on wheat in South Africa. Plant Disease 98: 1001. **IF** 2.46. doi.org/10.1094/PDIS-12-13-1195-PDN

Terefe TG, **Visser B**, Herselman L, Prins R, Negussie T, Kolmer JA and Pretorius ZA, 2014. Diversity in *Puccinia triticina* detected on wheat from 2008 to 2010 and the impact of new races on South African wheat germplasm. European Journal of Plant Pathology 139: 95-105. **IF** 1.933. doi.org/10.1007/s10658-013-0368-3

Cawood ME, Pretorius JC, **Visser B** and van der Westhuizen, 2013. Induced gene expression in wheat seedlings treated with a crude extract of *Agapanthus africanus* L.

prior to leaf rust infection. African Journal of Biotechnology 12: 2876-2883. **IF** 0.57. doi.org/ 10.5897/AJB12.1738

Scholtz JJ and **Visser B**, 2013. Reference gene selection for qPCR gene expression of rust-infected wheat. Physiological and Molecular Plant Pathology 81: 22-25. **IF** 2.043. doi.org/10.1016/j.pmpp.2012.10.006

van der Merwe NC, Schneider S-C and **Visser B**, 2012. TaqMan® Probe-based genotyping errors due to unknown SNP within binding region of LSP1 rs 3817198. Current Oncology 19: e106. **IF** 2.473.

Pretorius ZA, Szabo LJ, Boshoff WHP, Herselman L and **Visser B**, 2012. First report of a new TTKSF race of wheat stem rust (*Puccinia graminis* f. sp. *tritici*) in South Africa and Zimbabwe. Plant Disease 96: 590. **IF** 2.46. doi.org/10.1094/PDIS-12-11-1027-PDN

Visser B, Herselman L, Bender CM and Pretorius ZA, 2012. Microsatellite analysis of selected *Puccinia triticina* races in South Africa. Australasian Plant Pathology 41: 165-171. **IF** 1.041. doi.org/10.1007/s13313-011-0104-4

Mukoyi F, Soko T, Mulima E, Mutari B, Hodson D, Herselman L, **Visser B** and Pretorius ZA, 2011. Detection of variants of wheat stem rust race Ug99 (*Puccinia graminis* f. sp. *tritici*) in Zimbabwe and Mozambique. Plant Disease 95: 1188. **IF** 2.46. doi.org/10.1094/PDIS-04-11-0300

Terefe T, Pretorius ZA, Bender CM, **Visser B** and Herselman L, 2011. First report of a new wheat leaf rust (*Puccinia triticina*) race with virulence for *Lr12*, *13*, and *37* in South Africa. Plant Disease 95: 611. **IF** 2.46. doi.org/10.1094/PDIS-07-10-0545

Visser B, Herselman L, Park RF, Karaoglu H, Bender CM and Pretorius ZA, 2011. Characterization of two new *Puccinia graminis* f. sp. *tritici* races within the Ug99 lineage in South Africa. Euphytica 179: 119-127. **IF** 1.692. doi.org/10.1007/s10681-010-0269-x

Pretorius ZA, Bender CM, **Visser B** and Terefe T, 2010. First report of a *Puccinia graminis* f. sp. *tritici* race virulent to the *Sr24* and *Sr31* wheat stem rust resistance genes in South Africa. Plant Disease 94: 784. **IF** 2.46. doi.org/10.1094/PDIS-94-6-0784C

Visser B, L Herselman and ZA Pretorius, 2009. Genetic comparison of Ug99 with selected South African races of *Puccinia graminis* f. sp. *tritici*. Molecular Plant Pathology 10: 213-222. **IF** 4.485. doi.org/10.1111/j.1364-3703.2008.00525.x

Pretorius ZA, **Visser B** and du Preez PJ, 2007. First report of Asian Soybean Rust (*Phakopsora pachyrhizi*) on kudzu in South Africa. Plant Disease 91: 1364. **IF** 2.46. doi.org/10.1094/PDIS-91-10-1364C

Czérnic P, **Visser B**, Sun W, Savouré A, Deslandes L, Marco Y, Van Montagu M and Verbruggen N, 1999. Characterization of an *Arabidopsis thaliana* receptor-like kinase gene activated by oxidative stress and pathogen attack. Plant Journal 18: 321-328. **IF** 6.582. doi.org/10.1046/j.1365-313x.1999.00447.x

Spies JJ, Klopper KC and **Visser B**, 1999. Apomixis in the genus *Pentaschistis* (Arundinoideae). Bothalia 29: 203-209. **IF** 1.267. doi.org/10.4102/abc.v28i2.643

Klopper KC, Spies JJ and **Visser B**, 1998. Cytogenetic studies in the genus *Pentaschistis* (Poaceae: Arundinoideae). Bothalia 28: 231-238. **IF** 1.267. doi.org/10.4102/abc.v28i2.643

Popular publications (11 publications)

Visser B, Boshoff WHP en Pretorius ZA, 2022. Lesse uit die verlede: die gebruik van herbarium-eksemplare om die ontwikkeling van twee koringroespatogene in Suid-Afrika te ondersoek. KoringFokus November/Desember, p 22-23.

Boshoff WHP, **Visser B** en Pretorius ZA, 2022. Blaarroes van gars – roesswam onder vergrootglas in navorsing. KoringFokus Julie/Augustus, p 10-11.

Pretorius ZA, Prins R, Bender CM, **Visser B** en Boshoff WHP, 2021. Koringstreeproes: 25 jaar later. KoringFokus September/Oktober, p 22-24.

Meyer WB, Boshoff WHP, Minnaar-Ontong A en **Visser B**, 2020. Sonneblomroes – die nuutste inligting rakende die voorkoms van aggressiewer rasse in Suid-Afrika. SA Graan 22: 44-45.

Visser B, Boshoff WHP en Pretorius, ZA, 2020. Internasionale navorsing werp nuwe lig op die langafstandverspreiding van koringstamroes urediniospore. KoringFokus November/Desember, p 26-27.

Boshoff WHP, **Visser B** en Pretorius, ZA, 2020. Hawerkroonroes – swam bedreig vatbare kultivars vroeg in die seisoen. KoringFokus Julie/Augustus, p 16-18.

Visser B, Boshoff WHP en Pretorius ZA, 2020. Berberis – ‘n onbekende faktor in die stryd teen stam- en geelroes van koring in Suid-Afrika. KoringFokus Maart/April, p 8-10.

Boshoff WHP, **Visser B** en Pretorius, ZA, 2020. Hawerstamroes - neem ingeligte besluite oor vatbaarheid van kultivars. KoringFokus Januarie/Februarie, p 20-21.

Terefe TG, Prinsloo G, Roberts R, Botha W, Read D, Thompson G, Khozana A and **Visser B**, 2019. First report of wheat stripe mosaic virus in South Africa. KoringFokus September/Oktober, p 9-11.

Terefe TG, Prinsloo G, Roberts R, Botha W and **Visser B**, 2017. Detection of *Polymyxa graminis*, a vector of important soil borne viruses in South Africa. KoringFokus, November/Desember, p 10-12.

Keet J-H, **Visser B**, du Preez PJ and Cindi D, 2014. Barberry Pirates. Two species of Berberis could become problem invaders in South Africa. Veld and Flora, Desember, p 174-175.

Book chapter contribution (1 contribution)

Van As JG, du Preez PJ, Brown LR and Smit N, 2012. The story of life and the environment.

Reviewer activity

Research articles (20 manuscripts)

Plant Signaling and Behavior, 2023. The same boat, different storm: stress volatile emissions in response to biotrophic fungal infections in primary and alternate hosts. Manuscript KPSB-2023-0059.

Plant Pathology, 2022. SSR genotypes of *Puccinia triticina* in ten Provinces of China reveal a possible source of the wheat leaf rust fungus. Manuscript PP-22-082.

Plant Pathology, 2022. Analysis of genetic diversity and population structure of *Puccinia striiformis* f. sp. *tritici* infer inoculum relationships from Yunnan to the middle and lower reaches of the Yangtze River. Manuscript PP-22-382.

Biodiversitas Journal of Biological Diversity, 2021. Genetic Variation of *Austropuccinia psidii* in different host from Indonesia based on simple sequence repeats (SSR). Manuscript 51070-1.

Journal of Plant Pathology, 2021. First molecular characterization of *Puccinia coronata* on *Rhamnus virgata* (Cane buckthorn) from Pakistan. Manuscript JPPY-D-21-00036.

Plant Disease, 2021. First report of *Nigrospora oryzae* causing leaf spot on ginger in China. Manuscript PDIS-02-21-0260-PDN.

Australasian Plant Pathology, 2021. Overexpression of *Panax ginseng* defensin enhances resistance to fungal attack in transgenic *Arabidopsis thaliana*. Manuscript AUPP-D-20-00353.

South African Journal of Plant and Soil, 2020. Assessment and application of SSR markers for the South African pecan (*Carya illinoinensis*) industry. Manuscript TJPS-2020-0146.

Phytopathology, 2018. Presence of a sexual population of *Puccinia graminis* f. sp. *tritici* in Georgia provides a hotspot for genotypic and phenotypic diversity. Manuscript PHYTO-10-18-0382-R.

Mycological Progress, 2017. Phylogenetics of *Puccinia* species parasitizing *Berberis lycium* as a new secondary host record. Manuscript MYPR-D-17-00133.

Plant Pathology, 2017. Extended survival of *Puccinia graminis* f. sp. *tritici* urediniospores: implications for biosecurity and on-farm management. Manuscript PP-17-246.

South African Journal of Botany, 2016. Russian wheat aphids: Breakfast, lunch, and supper. Feasting on small grains in South Africa. Manuscript SAJB_2016_665.

Plant Pathology, 2014. Manuscript PP-13-414.

Journal of Plant Interactions, 2014. The wheat pathogenesis-related 2 gene contributes to the defense against *Puccinia triticina* infection. Manuscript TJPI-2014-0044.

South African Journal of Botany, 2012. Chitosan application induces expression of phenylalanine ammonia lyase (PAL) and improves resistance to *Fusarium circinatum* in *Pinus patula*. Manuscript SAJB-D-12-00162.

Australasian Plant Pathology, 2012. Functional analysis of BT4 of *Arabidopsis thaliana* in resistance against *Botrytis cinerea.* Manuscript AUPP393.

Australasian Plant Pathology, 2012. Molecular characterization and expression of a pathogen-induced senescence associated gene in wheat (*Triticum aestivum*). Manuscript AUPP-D-12-00401.

Annals of Applied Biology, 2011. Molecular detection of *Colletotrichum falcatum* Went causing red rot disease of sugarcane (*Saccharum officinarum* L.) using SCAR marker.

South African Journal of Botany, 2007. Resistance genes in plants and the dynamics of divergence before duplication. Manuscript SAJB-D-07-00185.

Plant Cell Reports, 2005. Is photosynthetic transcriptional regulation in *Triticum aestivum* L. cv. 'TugelaDN' a contributing factor for tolerance to *Diuraphis noxia* (Homoptera: Aphididae)? Manuscript PCR-Oct-04-0035-M.

NRF project applications

Botha-Oberholster, 2021. Aphid epigenetics and gene control. University of Stellenbosch. Application reference SRUG210317590245.

Venter E, 2021. The decoy hypothesis in the wheat-Russian wheat aphid interaction. University of Johannesburg. Application reference SRUG210429598122.

Venter E, 2019. The decoy hypothesis in the wheat-Russian wheat aphid interaction. University of Johannesburg. Application reference SRUG190415430349.

Gehring C, 2005. Novel signaling molecules in plant growth, movement and defense responses. University of the Western Cape.

NRF rating applications

Oberholster, 2021. University of Stellenbosch. Application ER382694.

Hammerbacher, 2017. University of Pretoria. Application ER294161.

Conference contributions

International conferences

Oral presentations (11 presentations)

Szabo LJ, Johnson JL, **Visser B**, Olivera PD and Jin Y, 2020. Elucidating the evolutionary history of *Puccinia graminis* f. sp. *tritici* lineages through analysis of allelic variation of selected genes. BGRI Technical Workshop (online). 7-9 October 2020.

Meyer M, Allen C, Thurston W, Burgin L, Millington S, Hort M, Alemayehu Y, Hodson D, Seid J, Derso E, **Visser B** and Gilligan C, 2018. Atmospheric spore dispersal modelling: new insights on wheat rust migration routes and real-time risk assessments. BGRI Technical Workshop, Marrakech, Morocco. 14-17 April 2018.

van der Merwe NC, Combrink HMVE, **Visser B**, Oosthuizen J, Moeti PJ, Buccamazza I and Foulkes WD, 2016. BRCA mutation spectrum within the South African Indian population: impact on diagnostic services. Current Oncology 23: e289. doi.org/10,3747/co.23.3327

Castelyn HD, **Visser B** and Pretorius ZA, 2015. An integrated approach to understanding adult plant resistance: histology and molecular features of stem rust on wheat. 14th International Cereal Rusts and Powdery Mildews Conference, Helsingør, Denmark. 5-8 July 2015.

Pretorius ZA, **Visser B**, Terefe T and Prins R, 2014. Discovery, mutation and spread of Ug99: a South African perspective. Workshop on surveillance of race Ug99 in South America and breeding wheat for resistance, Porto Alegre, Brazil. 8-10 October 2014.

Szabo LJ, **Visser B**, Sakthikumar S, Johnson JL, Park RF and Cuomo C, 2013. Understanding the genetic landscape of *Puccinia graminis* f. sp. *tritici*, from a global to country perspective. BGRI Technical Workshop, New Delhi, India. 19-22 August 2013.

Visser B, Viljoen R, Janse van Vuuren L, Wolmarans K, Swart WJ and Pretorius JC, 2012. The impact of selected plant activators on wheat and herbicides on the soil microbial population. 9th Inkaba yeAfrica GEO-FUTURE Workshop, Potsdam, Germany. 25-30 November 2012.

Visser B, Szabo LJ, Herselman L and Pretorius ZA, 2011. Genetic variation within race Ug99 of *Puccinia graminis* f. sp. *tritici* in South Africa. EPS Montreal International Gene Conference, Montreal, Canada.

Van der Westhuizen AJ, Wilding M and **Visser B**, 2004. PR-proteins and Russian wheat aphid resistance: β-1,3-glucanases. The International Joint Workshop on PR-proteins and Induced Resistance, Helsingor, Denmark.

Visser B, Pretorius GHJ, Prior B, Verbruggen N and van der Westhuizen AJ, 1999. Expression analysis and *in vitr*o expression of At-RLK3, a putative receptor-like kinase protein from *Arabidopsis thaliana*. 29th Congress of the Scandinavian Society for Plant Physiology, Joensuu, Finland.

Pretorius GHJ, Botha C and **Visser B**, 1997. Using yeast to study human tumor suppressor gene function. St. Mary's Hospital, London; Dept of Biochemistry, Dundee University; Dept of Microbiology, Gothenburg University.

Poster presentations (22 presentations)

Terefe TG, **Visser B** and Boshoff WHP, 2021. Diversity in *Puccinia triticina* on wheat in South Africa from 2017 to 2020. BGRI Technical Workshop (online). 6-8 October 2021.

Castelyn HD, **Visser B**, Ereful N, Boyd L and Pretorius ZA, 2018. Differential expression of effectors in wheat adult plant – *Puccinia graminis* f. sp. *tritici* interactions. 15th International Cereal Rusts and Powdery Mildews Conference, Skukuza, South Africa. 23-26 September 2018.

Terefe TG, **Visser B**, Boshoff WHP, Herselman L, Soko T, Chiuraise N, Siwale J, Mutari B, Hodson DP and Pretorius ZA, 2018. Evidence of wheat rust inoculum exchange between southern African countries. 15th International Cereal Rusts and Powdery Mildews Conference, Skukuza, South Africa. 23-26 September 2018.

Labuschagne R, Terefe T, Boshoff WHP, Pretorius ZA, Venter E and **Visser B**, 2018. The development of the *Puccinia triticina* population in South Africa. 15th International Cereal Rusts and Powdery Mildews Conference, Skukuza, South Africa. 23-26 September 2018.

Chemonges M, Herselman L, **Visser B**, Boshoff WHP and Pretorius ZA, 2018. Genetics of stem rust resistance in South African winter wheat varieties. BGRI Technical Workshop, Marrakech, Morocco. 14-17 April 2018.

Castelyn HD, Ereful NC, **Visser B**, Boyd LA and Pretorius ZA, 2018. Two phases of an adult plant resistance response in wheat to *Puccinia graminis* f. sp. *tritici* infection. BGRI Technical Workshop, Marrakech, Morocco. 14-17 April 2018.

Visser B, Meyer M, Park RF, Gilligan CA, Burgin LE, Hort MC, Hodson DP and Pretorius ZA, 2018. Gone with the wind: revisiting stem rust dispersal between southern Africa and Australia. BGRI Technical Workshop, Marrakech, Morocco. 14-17 April 2018.

Pretorius ZA, Maree G, Bender CM and **Visser B**, 2015. Phenotypic and genotypic characterization of South African *Pgt* race 2SA55. BGRI Technical Workshop, Sydney, Australia. 17-20 September 2015.

Selinga TI, Terefe TG, Herselman L, Pretorius ZA and **Visser B**, 2015. Monitoring the South African *Puccinia triticina* population through a combined phenotyping and SSR genotyping approach. BGRI Technical Workshop, Sydney, Australia. 17-20 September 2015.

Keet J-H, Jackson M, Cindi D, du Preez PJ and **Visser B**, 2015. Identification of naturalized and cultivated *Berberis* species in South Africa. BGRI Technical Workshop, Sydney, Australia. 17-20 September 2015.

Visser B, Herselman L and Pretorius ZA, 2015. Microsatellite characterization of South African *Puccinia striiformis* races. 14th International Cereal Rusts and Powdery Mildews Conference, Helsingør, Denmark. 5-8 July 2015.

van der Merwe NC, Combrink HMVE, Oosthuizen J, Moeti PJ, Peter N, **Visser B**, Buccamazza I, Schoeman M, Apffelstaedt JP, Chen W and Foulkes WD, 2014. A rainbow of genetic diversity in the South African population complicates BRCA testing. 5th International Symposium of the HBOC, Montreal, Canada.

Visser B, Szabo LJ, Herselman L and Pretorius ZA, 2014. Application of the Ug99 SNP assay on herbarium stem rust specimens. BGRI Technical Workshop, Obregon, Mexico. 22-25 March 2014.

Terefe TG, Tsilo TJ, Le Roux J, **Visser B** and Pretorius ZA, 2014. Breeding for resistance to stem rust (*Puccinia graminis* f. sp. *tritici*) in South Africa. BGRI Technical Workshop, Obregon, Mexico. 22-25 March 2014.

Castelyn HD, **Visser B** and Pretorius ZA, 2014. Quantification of fungal colonization in wheat lines with adult plant resistance to *Puccinia graminis* f. sp. *tritici*. BGRI Technical Workshop, Obregon, Mexico. 22-25 March 2014.

Visser B, Herselman L and Pretorius ZA, 2013. SSR analysis of herbarium specimens of *Puccinia graminis* f. sp. *tritici* in South Africa. BGRI Technical Workshop, New Delhi, India. 19-22 August 2013.

Bender CM, **Visser B** and Pretorius ZA, 2013. The rusts of *Secale africanum* in South Africa. BGRI Technical Workshop, New Delhi, India. 19-22 August 2013.

Terefe TG, Pretorius ZA and **Visser B**, 2012. Recently identified races of *Puccinia triticina* on bread wheat in South Africa. BGRI Technical Workshop, Beijing, China. 1-4 September 2012.

Visser B, Szabo L, Terefe T and Pretorius ZA, 2012. Evaluation of a SNP-based qPCR identification system for the *Pgt* Ug99 race group using field stem rust samples collected in South Africa. BGRI Technical Workshop, Beijing, China. 1-4 September 2012.

Kemp G, Janse van Vuuren LC, Janse van Rensburg R, **Visser B** and Pretorius JC, 2010. Using shotgun proteomics to elucidate the biochemical processes involved in plant activation. 4th EuPA Meeting, Estoril, Portugal. October 2010.

Visser B, Pretorius ZA, Larkin K, Goddard T, Ferguson B and Bandla M, 2005. Development of an enzyme-linked immunosorbent assay (ELISA) for soybean rust caused by *Phakopsora pachyrhizi*. Annual American Phytopathological Society, Austin, Texas.

Czérnic P, **Visser B**, Savouré A, Van Montagu, M and Verbruggen N, 1998. Characterization of an *Arabidopsis thaliana* receptor like protein kinase gene activated by salicylic acid, hypo-osmotic and oxidative stresses. Meeting of the Belgian Society of Biochemistry, Antwerp, Belgium.

National conferences

Oral presentations (30 presentations)

Wood AR, Boshoff WHP, **Visser B**, Bender CM and Pretorius ZA, 2022. The heteroecious life cycle of *Puccinia digitariae* on *Digitaria eriantha* and *Solanum* species, the first to be elucidated in South Africa in a century. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Visser B, Bender CM, Boshoff WHP and Pretorius ZA, 2022. Back to the future: using herbarium specimens to reconstruct the genetic development of two wheat rusts in South Africa. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Terefe TG, **Visser B**, Pretorius ZA and Boshoff WHP, 2022. The continual emergence of new *Puccinia triticina* races on wheat in South Africa. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Meyer WB, Boshoff WHP and **Visser B**, 2022. Identification of new *Puccinia helianthi* race variants in South Africa and their impact on sunflower hybrids. 52nd Congress of

the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Boshoff WHP, Terefe TG, **Visser B**, Bender CM and Pretorius ZA, 2022. Rust diseases of food and forage crops in South Africa: new threats and research to mitigate their impact. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Bender CM, Boshoff WHP, **Visser B**, Wood AR, Rothmann L and Pretorius ZA, 2022. Fig rust: an unexplored disease in South Africa. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Meyer WB, Boshoff WHP and **Visser B**, 2022. South African sunflower rust race variants and hybrid responses. 33rd SANSOR Congress, Cape Town, South Africa. 7-9 June 2022.

Meyer WB, Boshoff WHP and **Visser B**, 2021. Race diversity of *Puccinia helianthi* in South Africa. Student Symposium, Natural Sciences, South African Academy for Science and Art, Potchefstroom, South Africa (online). 28-29 October 2021.

Meyer WB, Boshoff WHP, Minnaar-Ontong A and **Visser B**, 2019. Phenotypic and genotypic variation of *Puccinia helianthi* in South Africa. 51st Congress of the Southern African Society for Plant Pathology, Club Mykonos, Langebaan, South Africa. 20-24 January 2019.

Boshoff WHP, **Visser B**, Terefe T and Pretorius ZA, 2019. Pathogenic variability in *Puccinia graminis* f. sp. *avenae* on oat and cultivar response. 51st Congress of the Southern African Society for Plant Pathology, Club Mykonos, Langebaan, South Africa. 20-24 January 2019.

Visser B, Meyer M, Park RF, Gilligan CA, Burgin LE, Hort MC, Hodson DP and Pretorius ZA, 2019. Out of Africa to Down-Under: a study on the proposed inter-continental movement of wheat stem rust. 51st Congress of the Southern African Society for Plant Pathology, Club Mykonos, Langebaan, South Africa. 20-24 January 2019.

Visser B, Park RF and Pretorius ZA, 2017. Microsatellite analysis confirms a historical intercontinental movement of *Puccinia graminis* f. sp. *tritici* from southern Africa to Australia. 50th Congress of the Southern African Society for Plant Pathology, Champagne Sports Resort, Drakensberg, South Africa. 15-19 January 2017.

Castelyn HD, Ereful NC, **Visser B**, Boyd LA and Pretorius ZA, 2017. Changes in gene expression within the adult plant resistant wheat-stem rust interaction. 50th Congress of the Southern African Society for Plant Pathology, Champagne Sports Resort, Drakensberg, South Africa. 15-19 January 2017.

Visser B, Terefe TG, Herselman L and Pretorius ZA, 2016. Ten years of genotypic analysis of the three wheat rusts in southern Africa. 11th South African Plant Breeding Association Symposium, Protea Hotel Technopark, Stellenbosch, South Africa. 8-10 March 2016.

Terefe TG, **Visser B** and Pretorius ZA, 2016. Variation in *Puccinia triticina* collected from wheat and triticale in South Africa. Combined Crops, Soils, Horticulture and Weeds Congress, Bloemfontein, South Africa. 18-21 January 2016.

Castelyn HD, **Visser B** and Pretorius ZA, 2015. Adult plant resistance in wheat: microscopic observation of stem rust colonization. 49th Congress of the Southern African Society for Plant Pathology, Bains Game Lodge, Bloemfontein, South Africa. 19-21 January 2015.

Visser B, Selinga TI, Terefe TG, Herselman L and Pretorius ZA, 2015. Genetic analysis of the *Puccinia graminis* f. sp. *tritici* population in South Africa. 49th Congress of the Southern African Society for Plant Pathology, Bains Game Lodge, Bloemfontein, South Africa. 19-21 January 2015.

Viljoen R, Mokheseng KE, Kemp G, Pretorius JC and **Visser B**, 2015. A *Lupinus albus* seed suspension affects photosynthesis in wheat seedlings. 41st South African Association of Botanists Conference, Thsipise Forever Resort, Limpopo, South Africa. 11-15 January 2015.

Castelyn HD, **Visser B** and Pretorius ZA, 2015. The timing and molecular features of adult plant resistance in wheat against stem rust. 41st South African Association of Botanists Conference, Thsipise Forever Resort, Limpopo, South Africa. 11-15 January 2015.

Visser B, Selinga TI, Terefe TG, Herselman L and Pretorius ZA, 2015. Genetic diversity in *Puccinia triticina* causing wheat leaf rust in South Africa. 41st South African Association of Botanists Conference, Thsipise Forever Resort, Limpopo, South Africa. 11-15 January 2015.

Terefe TG, **Visser B**, Prins R, Herselman L, Negussie T and Pretorius ZA, 2013. Variation in *Puccinia triticina* on wheat in South Africa and reaction of commercial cultivars and breeding lines to recently identified races. 48th Congress of the Southern African Society for Plant Pathology, Klein Kariba, Bela-Bela, South Africa. 20-23 January 2013.

Schneider S-R, van der Merwe NC and **Visser B**, 2012. Comparison of different allelic discrimination methods for a TaqMan® probe-based assay. South African Genetics and Bioinformatics Society Conference, Stellenbosch, South Africa. 10-12 September 2012.

Janse van Rensburg R, Kemp G, Pretorius JC and **Visser B**, 2012. Proteomic analysis of wheat treated with a novel plant activator. 38th Annual Conference of the South African Association of Botanists, Pretoria, South Africa. 15-18 January 2012.

Castelyn HD, **Visser B** and Pretorius ZA, 2012. Volatile emissions of *Puccinia triticina* infected wheat and its effect on uninfected wheat seedlings. 38th Annual Conference of the South African Association of Botanists, Pretoria, South Africa. 15-18 January 2012.

Visser B, Szabo LJ, Herselman L and Pretorius ZA, 2012. Ug99 variants of *Puccinia graminis* f. sp. *tritici* in South Africa. 38th Annual Conference of the South African Association of Botanists, Pretoria, South Africa. 15-18 January 2012.

Pretorius ZA, **Visser B**, Herselman L, Bender CM and Negussie TG, 2011. Description and pathogenicity of new wheat stem rust races in South Africa. 47th Congress of the Southern African Society for Plant Pathology, Berg-en-Dal, Kruger Park, South Africa. 23-26 January 2011.

Appelgryn JJ and **Visser B**, 2008. Evidence for volatile signaling between leaf-rust infected and uninfected wheat. 34th Conference of the South African Association of Botanists, Drakensville Mountain Resort, South Africa.

van der Merwe CHJ, **Visser B**, Pretorius JC and van der Westhuizen AJ, 2008. Evaluation of gene expression in wheat upon treatment with a novel plant activator. 34th Conference of the South African Association of Botanists, Drakensville Mountain Resort, South Africa.

Appelgryn JJ, **Visser B** and Pretorius ZA, 2006. Early signaling events that occur during the interaction between wheat and leaf rust. 19th Congress of the South African Genetic Society, University of the Free State, Bloemfontein.

van Zyl PJL, **Visser B** and van der Westhuizen AJ, 2006. Biochemical and molecular analysis of the early response of *Triticum aestivum* infected with *Puccinia striiformis* f. sp. *tritici*. 19th Congress of the South African Genetic Society, University of the Free State, Bloemfontein.

Poster presentations (15 presentations)

Tsotetsi ME, Boshoff WHP and **Visser B**, 2022. Functional analysis of the *AvrSr50* avirulence gene in South African *Puccinia graminis* f. sp. *tritici* isolates. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Spelman Z, **Visser B**, Terefe T, Pretorius ZA and Boshoff WHP, 2022. Pathogenicity and microsatellite characterization of *Puccinia hordei* in South Africa. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

du Toit I, Boshoff WHP, Rothmann LA and **Visser B**, 2022. Fungicide sensitivity among South African *Puccinia graminis* f. sp. *tritici* isolates. 52nd Congress of the Southern African Society for Plant Pathologists, Future Africa, Pretoria, South Africa. 1-3 August 2022.

Meyer WB, Boshoff WHP and **Visser B**, 2022. Occurrence and pathogenicity of *Puccinia helianthi* on sunflower in South Africa. 14th Southern African Plant Breeding Symposium, Protea Hotel, Stellenbosch, South Africa. 6-9 March 2022.

Chiuraise N, **Visser B**, Maré A and Boshoff WHP, 2022. Status of resistance to *Puccinia triticina* in Zimbabwean wheat germplasm. 14th Southern African Plant Breeding Symposium, Protea Hotel, Stellenbosch, South Africa. 6-9 March 2022.

Kozana A, **Visser B**, Roberts R, Botha W, Prinsloo G and Terefe T, 2019. First detection of *Polymyxa graminis*, a parasite of cereal roots and vector of cereal viruses, in South

Africa. 51st Congress of the Southern African Society for Plant Pathology, Club Mykonos, Langebaan, South Africa. 20-24 January 2019.

Terefe TG, **Visser B** and Pretorius ZA, 2017. Diversity within the population of *Puccinia graminis* f. sp. *tritici* detected on wheat and triticale in South Africa. 50th Congress of the Southern African Society for Plant Pathology, Champagne Sports Resort, Drakensberg, South Africa. 15-19 January 2017.

Terefe TG, **Visser B** and Pretorius ZA, 2015. Variation among *Puccinia graminis* f. sp. *tritici* and *Puccinia triticina* isolates from wheat in South Africa during 2007-2013. 49th Congress of the Southern African Society for Plant Pathology, Bains Game Lodge, Bloemfontein, South Africa. 19-21 January 2015.

Van der Merwe NC, Peter N, Moeti P and **Visser B**, 2013. Familial breast cancer screening of the Sotho/Tswana population of the Free State: do we have an effective testing strategy? 15th Biennial Congress of the Southern Society for Human Genetics (SASHG), Sandton, South Africa. 6-9 September 2013.

Van der Merwe NC, Combrink HMVE, **Visser B**, Oosthuizen J, Todd CJ and Buccamazza I, 2013. Familial breast cancer in the Indian population of South Africa. 15th Biennial Congress of the Southern Society for Human Genetics (SASHG), Sandton, South Africa. 6-9 September 2013.

Schneider S-R, van der Merwe NC and **Visser B**, 2013. The influence of *ESR1*, *TNRC9* and *MAP3K1* on the expression of breast cancer in the Afrikaner *BRCA2* carriers. 15th Biennial Congress of the Southern Society for Human Genetics (SASHG), Sandton, South Africa. 6-9 September 2013.

Terefe TG, **Visser B**, Prins R, Herselman L, Negussie T and Pretorius ZA, 2013. Variation in *Puccinia triticina* on wheat in South Africa and reaction of commercial cultivars and breeding lines to recently identified races. 48th Congress of the Southern African Society for Plant Pathology, Klein Kariba, Bela-Bela, South Africa. 20-23 January 2013.

Scholtz JJ and **Visser B**, 2012. Expression analysis of two genes during three different wheat-*Puccinia* interactions using qPCR. 38th Annual Conference of the South African Association of Botanists, Pretoria, South Africa. 15-18 January 2012.

Castelyn HD, **Visser B** and Pretorius ZA, 2011. Evidence for volatile signaling between leaf rust infected and uninfected wheat seedlings. 8th Annual Inkaba yeAfrica Workshop at GeoSynthesis, CTICC, Cape Town, South Africa.

Pretorius ZA, **Visser B**, Herselman L, Bender CM and Negussie TG, 2011. Description and pathogenicity of new wheat stem rust races in South Africa. 47th Congress of the Southern African Society for Plant Pathology, Berg-en-Dal, Kruger Park, South Africa. 23-26 January 2011.

Attendance of scientific workshops

Bioinformatics and Wheat Genomics IV, 2023. Presented on behalf of the British High Commission and the UK Science and Innovation Network by Prof. Diane G.O. Saunders, John Innes Centre, Norwich, United Kingdom. 20-24 February 2022, CenGen, Worcester, South Africa.

Bioinformatics and Wheat Genomics III, 2020. Presented on behalf of the British High Commission and the UK Science and Innovation Network by Prof. Diane G.O. Saunders, John Innes Centre, Norwich, United Kingdom. 24-28 February 2022, CenGen, Worcester, South Africa.

Bioinformatics and Wheat Genomics II, 2019. Presented on behalf of the British High Commission and the UK Science and Innovation Network by Prof. Diane G.O. Saunders, John Innes Centre, Norwich, United Kingdom. 4-8 February 2019, CenGen, Worcester, South Africa.

Rust watch pathogenomics workshop, 2019. Presented by Prof. Diane G.O. Saunders, John Innes Centre, Norwich, United Kingdom. 4-7 November 2019, JIC, Norwich, UK.

Introduction to Bioinformatics, 2019. Pan African Bioinformatics network for H3ABioNet, University of Cape Town. Presented online.

3rd Wheat rust control workshop, 2013. I presented a lecture on "Genotyping of *Puccinia graminis* f. sp. *tritici* and *Puccinia triticina* races in South Africa". CenGen, Worcester, South Africa.

2nd Wheat rust control workshop, 2011. I presented a lecture on "Stem and leaf rust race identification: are molecular techniques the answer?". University of the Free State, Bloemfontein, South Africa.

Scientific workshop of the Free State branch of the SASSP, 2010. I presented a lecture on "Molecular cloning and analysis of plant disease resistance genes". Parys, South Africa.

1st Wheat rust control workshop, 2009. I presented a lecture on "Genetic comparison of Ug99 with selected South African races of *Puccinia graminis* f. sp. *tritici*". University of the Free State, Bloemfontein.

Plant induced resistance for pest and disease control (PIRAC), 2008. Presented by the International Foundation for Science (IFS) Sweden. I presented a lecture on "Characterization of some early defence responses of wheat infected with *Puccinia* spp". Cape Town, South Africa.

WHO/TDR workshop on Good Laboratory Practices, 2007. University of the Free State, Bloemfontein, South Africa.

Level 1 First Aid training course, 2007. Mangaung First Aid Training Centre, Bloemfontein, South Africa.

Presentation of scientific workshops

Molecular detection of *Babesia equi* parasites in horse blood using PCR, 2003. Presented to postgraduate students at Department of Zoology, QwaQwa campus of the University of the Free State.

Molecular genetics refreshment courses, 1996. Presented to professional persons at the Department of Botany and Genetics, University of the Free State.

Marketable outputs

Together with EnviroLogix Inc and Prof ZA Pretorius, I was involved in the production of two test systems for the detection of soybean rust (*Phakopsora pachyrhizi*) on soybean. The two tests included an ELISA test for laboratory tests and a QuickStix Strip test that allow farmers to quickly determine the identity of rust pustules on soybean leaves. Both tests were commercialized. (http://envirologix.com/artman/publish/indexplantpath.shtml)

Teaching and Learning

Undergraduate and postgraduate teaching

2014-current
BLGY1643 The Interdependence of plants and life on earth
2007-current
BTNY3754 Plant Molecular Biotechnology
2000-current
BTNY6874/BTNC6804 Advanced Plant Molecular Biotechnology
2000-current
BTNY6806 Botany Literature Review
2000-current
BTNY6808 Botany Research Project
2000-current
BTNY8900 Botany MSc dissertation
2000-current
BTNY9100 Botany PhD thesis
2010-2013
BLG114 Building Blocks of Life (co-presented)
2008-2012
BOC314 Molecular Biology (co-presented)
1991-2006
Introductory Molecular Genetics
Advanced Molecular Genetics

External moderation of undergraduate modules

2019-2022
GEN314 Genomes and Genome analysis, Department of Genetics, University of Stellenbosch
2008-2018

Plant Biotechnology, Department of Botany and Plant Biotechnology, University of Johannesburg

2000-2004

Plant Molecular Biology, School for Botany and Zoology, University of KwaZulu-Natal, Pietermaritzburg Campus

Postgraduate student supervision

BSc Honors (37 students)

I acted as supervisor for B.Sc. Honors degree students during 1993 (1), 1994 (1), 1997 (1), 1998 (2), 1999 (2), 2000 (1), 2001 (4), 2002 (2), 2003 (1), 2004 (2), 2006 (2), 2008 (1), 2009 (2), 2012 (4), 2015 (1), 2016 (2), 2017 (2), 2019 (2), 2020 (2) and 2021 (2).

MSc and MSc Agric (29 students)

Maphobole L, 2022-present. Phenotypic and genotypic characterisation of *Puccinia sorghi* isolates from South Africa. Supervisor: Prof WHP Boshoff, co-supervisor: Prof **B Visser**.

Ramovha D, 2022-present. Genetic diversity of *Puccinia coronata* from grasses and cultivated oat in South Africa. Supervisor: Prof **B Visser**, co-supervisors: Prof WHP Boshoff, Dr CM Bender.

Tsotetsi ME, 2021-present. Functional analysis of *AvrSr35* and *AvrSr50* avirulence genes in South African *Puccinia graminis* f. sp. *tritici* isolates. Supervisor: Prof **B Visser**, co-supervisor: Prof WHP Boshoff.

du Toit I, 2021-2022. Triazole fungicide sensitivity among South African *Puccinia graminis* f. sp. *tritici* isolates. Supervisor: Prof **B Visser**, co-supervisors: Prof WHP Boshoff, Dr L Rothmann.

Spelman Z, 2020-2021. Phenotypic and genotypic variation of *Puccinia hordei* in South Africa. Supervisor: Prof WHP Boshoff, co-supervisor: Prof **B Visser**.

Botha CJ, 2019-2023. Biochemical and molecular analysis of the adult plant resistance response in wheat to stem rust disease. Supervisor: Prof **B Visser**, co-supervisors: Dr HD Castelyn, Dr L Mohase.

Minnaar E, 2018-2020. Genetic variation in South African *Diuraphis noxia* biotypes. Supervisor Prof **B Visser**, co-supervisors: Dr L Mohase, Dr A Jankielson.

Meyer WB, 2017-2019. Phenotyping and gentoyping the South African sunflower rust population. Supervisor: Dr **B Visser**, co-supervisor: Dr WHP Boshoff.

Labuschagne R, 2016-2019. Microsatellite analysis of the *Puccinia triticina* population in South Africa. Supervisor: Dr **B Visser**, co-supervisor: Dr E Venter.

Combrinck HMVE, 2014-2016. Molecular screening of the South African Indian population for *BRCA1* and *BRCA2* using high resolution melting analysis. Supervisor Dr NC vd Merwe, co-supervisor: Dr **B Visser**.

Selinga TI, 2013-2015. Genetic analysis of *Puccinia graminis* f. sp. *tritici* and *Puccinia triticina* populations in southern Africa. Supervisor Dr **B Visser**, co-supervisor Prof ZA Pretorius.

Mafa MM, 2013-2015. Biochemical response of wheat exposed to volatiles emitted by *Puccinia triticina* infected wheat. Supervisor: Dr **B Visser**, co-supervisor Prof ZA Pretorius.

Castelyn HD, 2010-2013. Volatile emissions of *Puccinia triticina* infected wheat and its effect on uninfected wheat seedlings. Supervisor: Dr **B Visser**, co-supervisor: Prof ZA Pretorius.

Scholtz JJ, 2010-2013. Identification of a putative protease inhibitor involved in three different *Puccinia-Triticum aestivum* interactions. Supervisor: Dr **B Visser**.

Pienaar M, 2009-2013. A molecular phylogenetic investigation of the genus Raphionacme. Supervisor: Dr **B Visser**, co-supervisors: Dr AM Venter, Dr. M Jackson.

Shata A, 2009-2011. The generation of recombinant genes that might have disease resistance applications. Supervisor: Dr **B Visser**.

Coetzee S, 2008-2011. Association of single nucleotide polymorphisms with familial breast cancer in the Afrikaner patients. Supervisor: Dr NC van der Merwe, co-supervisor: Dr **B Visser**.

Janse van Rensburg R, 2008-2009. An investigation into the role of a novel plant activator in the induced defence response of wheat through the Ptr ToxA binding protein 1. Supervisor: Dr **B Visser**, co-supervisor: Prof JC Pretorius.

Dajee B, 2006-2008. The effect of selected polymorphisms in the p53 pathway as potential genetic modifiers of cancer risk and penetrance in female Afrikaner *BRCA2* carriers. Supervisor: Dr NC van der Merwe, co-supervisor: Dr **B Visser**.

Van der Merwe CHG, 2005-2008. The evaluation of gene expression in wheat upon treatment with a novel plant activator. Supervisor: Dr **B Visser**, co-supervisors: Prof AJ van der Westhuizen, Prof JC Pretorius.

Liebenberg JJR, 2005-2007. An investigation into possible sugar signaling events during the infection of wheat with *Puccinia triticina*. Supervisor: Dr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Van Zyl PJL, 2003-2004. Biochemical and molecular analysis of the early response of *Triticum aestivum* infected with *Puccinia striiformis* f. sp. *tritici*. Supervisor: Dr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Huang C, 2003-2004. Cloning of genes involved in the early response if wheat towards Russian wheat aphid infestation. Supervisor: Dr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Bezuidenhout M, 2003-2004. Identification of a putative protein kinase gene involved in the resistance response of sunflower to rust. Supervisor: Dr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Appelgryn JJ, 2002-2003. The identification of genes involved in the interaction between *Triticum aestivum* and *Puccinia triticina*. Supervisor: Mr **B Visser**, co-supervisor: Dr CD Viljoen.

Lategan S, 2002-2003. The role of a receptor-like protein kinase (At-RLK3) in the perception of chemical activators in *Arabidopsis thaliana*. Supervisor: Mr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Du Plessis S, 1999-2002. An allele database for cattle as an aid to forensic investigation and parentage verification. Supervisor: Mr **B Visser**, co-supervisor: Mr JP van Zyl.

Wilding MW, 1997-2003. Aspects of beta-1.3 glucanase expression in wheat associated with Russian Wheat Aphid resistance. Supervisor: Prof. A van der Westhuizen, co-supervisor: Mr **B Visser**.

Klopper KC, 1995-1996. A preliminary phylogenetic study of the genus *Pentaschistis* (Poaceae, Arundinoideae). Supervisor: Prof JJ Spies, co-supervisor: Mr **B Visser**.

PhD (8 students)

Du Toit I, 2023-present. Improved wheat rust surveillance in South Africa using MARPLE diagnostics. Supervisor: Prof **B Visser**, co-supervisors: Prof WHP Boshoff, Prof DGO Saunders.

Meyer WB, 2021-present. Virulence and genotypic assessment of South African *Puccinia helianthi* races. Supervisor: Prof **B Visser**, co-supervisor: Prof WHP Boshoff.

Chiuraise N, 2020-2022. Pathogen variation and genetic control of *Puccinia triticina* in Zimbabwe. Supervisor: Prof WHP Boshoff, co-supervisors: Prof **B Visser**, Dr A Mare.

Castelyn HD, 2013-2018. Molecular and cellular analysis of adult plant resistance in wheat to *Puccinia graminis* f. sp. *tritici*. Supervisor: Prof ZA Pretorius, co-supervisor: Dr **B Visser**.

Janse van Rensburg R, 2010-2013. The role of a novel plant activator on the expression of *PtrToxaBP1*. Supervisor: Dr **B Visser**, co-supervisor: Prof JC Pretorius.

Huang J-C, 2005-2008. Metabolic aspects of the early response of leaf-rust infected wheat. Supervisor: Dr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Bezuidenhout M, 2005-2008. Characterization of early defense responses in rust-infected sunflower. Supervisor: Dr **B Visser**, co-supervisor: Prof AJ van der Westhuizen.

Appelgryn JJ, 2004-2007. Characterization of some early defense responses of leaf rust-infected wheat. Supervisor: Dr **B Visser**, co-supervisor: Prof ZA Pretorius.

Examination of dissertations and theses

External students

MSc (15 students)

Buitendag C, 2023. Gene silencing mediated by dsRNA reduces grey leaf spot disease in maize. University of Pretoria.

Mkhize NS, 2020. *Diuraphis noxia* biotype recognition by the wheat integrated domain nucleotide-binding leucine-rich repeat, TaAdnr1. University of Johannesburg.

Dube GZ, 2017. Resistance gene analogue regulation in the wheat-Russian wheat aphid interaction. University of Johannesburg.

Khanyi H, 2017. Relatedness of *Saccharum* species, hybrids and wild relatives in eastern South Africa. North-West University.

Lekgari GLP, 2015. Over-expressing *Arabidopsis* MYB transcription factors in *Salvia stenophylla* and sugarcane and development of a micropropagation protocol for *Salvia repens*. University of Stellenbosch.

Haasbroek MP, 2014. Characterization of *Exserohilum turcicum* isolates within South African maize production areas. University of Pretoria.

Mokhele TA, 2012. The application of DNA fingerprinting and marker-assisted backcross selection in breeding for sunflower high oleic acid content lines. North-West University.

Mhora TT, 2012. Genomics of quantitative resistance to brown rust (*Puccinia melanocephala*) in a sugarcane breeding population. University of KwaZulu Natal.

Matsioloko MT, 2011. Using cDNA-AFLP and microarray analysis for rapid identification of *Diuraphis noxia* induced genes from near-isogenic *Triticum aestivum* lines. University of Pretoria.

Jackson C, 2010. Significance of photosynthesis and the photosynthesis related genes TMP14, FBPase and P700 in Russian Wheat Aphid resistant lines. University of Pretoria.

Bhamjee RH, 2010. Comparing suppression subtractive hybridization and bioinformatics approaches for analyzing gene expression in *Arabidopsis thaliana* following a heat shock treatment. University of Johannesburg.

Wentzel JF, 2009. Modifying the comet assay for measuring global DNA methylation in a variety of tissue cells. North-West University.

Ramogola WPM, 2009. Molecular analyses of *Salvia africana-lutea* L. transgenic root clones for secondary bioactives. University of Stellenbosch.

Janse van Vuuren N, 2008. Characterization of gene sequences induced in barley after pathogen infection. University of Johannesburg.

Zhou H, 2005. Isolation and functional genetic analysis of *Eucalyptus* wood formation genes. University of Pretoria.

PhD (6 students)

Zanamwe P, 2019. Use of ethylene as an alternative to gibberellic acid in barley malting. University of Johannesburg.

Byth-Illing H-A, 2014. *Nicotiana tabacum* cell death during *Ralstonia solanacearum* infection: the impact of heat and bacterial virulence. University of Johannesburg.

Derevnina L, 2012. Rust resistance in barley (*Hordeum vulgare*). University of Sydney.

Phillips SM, 2010. Molecular characterization of elicitor responsive genes in cotton. University of Johannesburg.

Sanabria NM-A, 2008. Molecular characterization of a lipopolysaccharide-induced S-domain receptor-like kinase from *Nicotiana tabacum*. University of Johannesburg.

Conradie KR, 2008. Molecular assessment of the occurrence of toxic cyanobacteria and cyanotoxins in South African impounds. North-West University.

Internal students

MSc (8 students)

Naidoo P, 2023. Transcriptome sequencing and digital expression analyses of flower morphogenesis genes in *Clivia miniata*. University of the Free State.

Mendes dos Ramos S, 2020. Production of a bacterially expressed truncated rotavirus VP4-NSP4 fusion peptide. University of the Free State.

Pieterse B, 2019. Study of HST6 function in *Candida albicans* through the application of a CRISPR-Cas9 gene editing system. University of the Free State.

Lekena N, 2019. Recombinant production of equine chorionic gonadotropin. University of the Free State.

Jooste JE, 2015. Identification of *Saccharomyces cerevisiae* proteins that bind to nucleosomes at positions other that the N-terminal histone tails. University of the Free State.

Senoko KJ, 2014. Combining wheat rust and Fusarium head blight resistance genes and QTL using marker-assisted selection. University of the Free State.

Sydenham SL, 2008. Pyramiding wheat rust resistance genes using marker-assisted selection. University of the Free State.

Phillippou OA, 2007. Targeting quantitative trait loci for adult plant stripe rust resistance in wheat. University of the Free State.

PhD (3 students)

Maleka MF, 2020. Sequencing and characterization of the *Clivia miniata* flower transcriptome. University of the Free State.

Sydenham SL, 2014. Marker-assisted backcross breeding for Fusarium head blight resistance in South African wheat. University of the Free State.

Kawuki RS, 2009. Variation in Cassawa (*Manihot esculenta* Crantz) based on single nucleotide polymorphisms, simple sequence repeats and phenotypic traits. University of the Free State.

Organization of scientific conferences (6 conferences)

52nd Congress of the Southern African Society for Plant Pathologists, 2024. Golden Gate National Park, South Africa. Member of the LOC.

15th International Cereal Rusts and Powdery Mildew conference, 2018. Skukuza, Kruger National Park, South Africa. Chair of the LOC.

42nd Congress of the South African Association of Botanists, 2016. University of the Free State, Bloemfontein. Member of the LOC.

19th Congress of the South African Genetic Society, 2005. University of the Free State, Bloemfontein. Member of the LOC.

20th Congress of the South African Association of Botanists, 1995. University of the Free State, Bloemfontein. Member of the LOC.

13th Congress of the South African Genetic Society, 1992. University of the Free State, Bloemfontein. Member of the LOC.